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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/719,069 | 11/21/2003 | Brian Wehrung | | 2247 |

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| EXAMINER | |
|---|---|
| SHAPIRO, JEFFERY A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3653 | |

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/719,069 | WEHRUNG ET AL. | |
| | Examiner | Art Unit | |
| | Jeffrey A. Shapiro | 3653 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *7,8 and 30-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,8 and 30-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

*1.* A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/6/06 has been entered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear how the director is providing rotational movement and to what it is providing rotational movement to.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 30-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6,185,474 B1) in view of Soraoka et al (US 6,526,330 B2).

Regarding **Claims 8 and 35-37**, Nakamura discloses a distributed control system (see figure 1) having a host computer (30) corresponding to Applicant's higher level controller, said host computer including an exposure information management program (33), which manages jobs and communicates information in response to queries from exposure units concerning work information. See col. 5, lines 28-60. A semiconductor exposure unit (10) has an exposure work information management program (13) and an equipment control program (12) which corresponds to Applicant's lower level controller. Note that the exposure unit (10) may be construed as a "neighborhood." The local goals are construed to be formulated by the exposure management program (33) with input from elements (13, 14 and 34).

Nakamura does not expressly disclose, but Soraoka discloses the details of a wafer transfer/transport apparatus (202, 204, 208, 9, 10 and 92. See col. 5, lines 52-61, col. 7, lines 34-57 and col. 8, lines 12-21 of Soraoka. Note that zones can be construed to be the track or rail portion near an exposure unit (10) of Nakamura or one of the bays (2) of Soraoka.

Regarding **Claims 30-32 and 34**, note that Soraoka's device necessarily accelerates and decelerates the article transporter/carrier within a particular track or rail portion and between processing stations such as between stations (100). See for example, figure 6a, which illustrates a wafer (3) being transferred from track zone (204)

to track zone (208), and then to track zone (200). As a further example, figure 16 illustrates a track zone for each processor (100a and b).

****Soraoka discloses a host computer at col. 9, lines 22-30 that manages all processors (100). However, each processor and track communicates with the other portions. See col. 7, line 65-col. 8, line 26.

Regarding **Claim 33**, note that the robots (10) provide rotational movement between zones. See figure 3, element (101), for example.

Both Nakamura and Soraoka are considered to be analogous art because they both concern semiconductor wafer manufacture.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used the wafer transport system of Soraoka in the wafer manufacturing system of Nakamura.

The suggestion/motivation would have been provided by Soraoka, for example, at abstract, lines 4-7, col. 5, lines 52-61, col. 7, lines 34-57 and col. 8, lines 12-21, which describe use of a transport system for wafers in such a wafer manufacturing system as Nakamura. Additionally, one ordinarily skilled in the art would have recognized a need to transport wafers between processing stations, therefore leading to the use of Soraoka's transport system in Nakamura's wafer manufacturing system.

Note also that whether or not the manufacturing product is a semiconductor wafer, pharmaceutical or magnetic storage disk, the system of Nakamura will still work and function as Applicant's claimed system.

Regarding routing, note that Nakamura's exposure work information management program performs optimal routing based on various factors. This program has to route the wafers to the correct exposure unit so as to have a particular batch of wafers processed.

Regarding regulation of the speeds of the various transport devices, not that the robots and transfer means of Saraoka must run by motors, which must speed up and slow down to a stop in front of a particular processing station in order to transfer wafers to a wafer robot at that processing station.

Regarding the destination announce message, note that Nakamura's figures 2 and 3, which describes a query as to whether or not the necessary work information has been received. Destination information and status can be construed to be such information that one ordinarily skilled in the art would need to use in Nakamura's system in order for it to properly transport wafers between stations.

6. Claims 8 and 30-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6,185,474 B1) in view of Jackson et al (US 6,039,316). Nakamura discloses a distributed control system (see figure 1) having a host computer (30) corresponding to Applicant's higher level controller, said host computer including an exposure information management program (33), which manages jobs and communicates information in response to queries from exposure units concerning work information. See col. 5, lines 28-60. A semiconductor exposure unit (10) has an exposure work information management program (13) and an equipment control program (12) which corresponds to Applicant's lower level controller. Note that the

exposure unit (10) may be construed as a "neighborhood." The local goals are construed to be formulated by the exposure management program (33) with input from elements (13, 14 and 34).

Nakamura does not expressly disclose, but Jackson discloses the details of a wafer transfer/transport apparatus (100) having micro-jets (202) actuated by individual controllers/computational elements (604 and 606). There are first level controllers (620-622) are coupled to second level controller (608). See figures 1 and 6 and col. 6, line 60-col. 7, line 21 of Jackson. Note that zones can be construed to be the track or conveying surface on which said jets (202) reside. Note also that col. 3, lines 41-47 describe this system as being used with numerous objects, including semiconductor wafers. Col. 3, line 67-col. 4, line 2 describes that actuators (202) can engage a mechanical drive connected to transportation rollers. First, second and third control threads are construed to be a control thread associated with a particular sensor/actuator (202, 203) and first level computational element (604). Note also that a first control thread (604) communicates with another computational element (604) through computational element (606). Note also that one can construe first, second and third control threads to correspond with first, second and third level computational elements (604, 606 and 610). See Jackson, figure 7, for example.

Both Nakamura and Jackson are considered to be analogous art because Nakamura concerns semiconductor wafer manufacture that requires transportation of wafers between production stations and Jackson teaches a wafer handling transporter using microelectromechanical (MEMS) devices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used the wafer transport system of Jackson in the wafer manufacturing system of Nakamura.

The suggestion/motivation would have been provided by Jackson, for example, at col. 8, lines 15-40, which describe use of a transport system for wafers that vary in size in such a wafer manufacturing system as Nakamura's. Additionally, one ordinarily skilled in the art would have recognized a need to transport wafers between processing stations.

Note also that whether or not the manufacturing product is a semiconductor wafer, pharmaceutical or magnetic storage disk, the system of Nakamura will still work and function as Applicant's claimed system.

Regarding routing, note that Nakamura's exposure work information management program performs optimal routing based on various factors. This program has to route the wafers to the correct exposure unit so as to have a particular batch of wafers processed.

Regarding regulation of the speeds of the various transport devices, note that air jet actuators (202) apply forces to the object to move it, and that increasing or decreasing said forces affects the acceleration of the object and that sensor (203) senses the object. See Jackson, col. 4, line 52-col. 5, line 63.

Regarding rotation of the object, Jackson also describes rotation of the object at col. 4, lines 42-45.

Regarding the destination announce message, note that Nakamura's figures 2 and 3, which describes a query as to whether or not the necessary work information has been received. Destination information and status can be construed to be such information that one ordinarily skilled in the art would need to use in Nakamura's system in order for it to properly transport wafers between stations.

Further regarding a third control thread, note Jackson, col. 8, lines 15-39 which describe that the number of levels of control is based on the size of the object detected by the first level controllers, which other higher levels of control being established based on that reading.

***Response to Arguments***

7. Applicant's arguments filed 7/7/06 have been fully considered but they are not persuasive. Applicant asserts that Nakamura's exposure units (10-30) do not communicate between themselves and do not use control threads. Nakamura's Claim 1 describes "communication means for performing communication with external units." See col. 16, lines 37-38. Col. 14, lines 35-42 describe an embodiment in which the steppers (1021-1024) are recipients of data files instead of a server. Therefore, the steppers (10-30) are construed to communicate with each other, passing data files between them. These data files are used as information for controlling the manufacturing system. Note again, exposure unit (10) is controlled by equipment control program (12), which in turn is controlled based on the information received through communication control program (11) and exposure work management program (13). Each equipment (10) along with its associated components (11-13) can be

construed to be a neighborhood. A control thread is construed to be nothing more than a computer program that computes data and passes files to other computer programs or memory. Therefore, since Nakamura's semiconductor exposure units have control programs (12 and 13), it is construed that these exposure units are controlled by control threads.

The control threads of various units communicate with each other through communication control program (11). These pieces of equipment (10) communicate with other equipment (20) having similar components. See figure 1 and col. 5, line 20-col. 6, line 29. The information communicated by the host computer (30) includes global information required for the "zones" represented by a particular equipment (10, 20) to control themselves. Therefore, the global requirements for control of the zones (10, 20) are communicated from the top level computer (30) for local "distributed" control to the particular piece of equipment (10 or 20). These pieces of equipment communicate with each other as well. Saraoka is used in combination with Nakamura since it teaches particular transportation apparatus between zones/pieces of equipment (10, 20). Therefore, Nakamura and Saraoka in combination as described above, are construed to read on Applicant's claims.

Regarding the combination of Nakamura and Jackson, contrary to Applicant's assertions, first level computation elements (604) communicate with other first level elements through second level computational elements (606). Additionally, zones can be construed as being defined as being made up of combinations of first, second and third level components, with separate neighborhoods communicating with each other.

Therefore, Nakamura combined with Jackson are also considered to read on Applicant's claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey A. Shapiro whose telephone number is (571)272-6943. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick H. Mackey can be reached on (571)272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAS

September 11, 2006

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